

PATENT  
App. Ser. No. 10/806,273  
Atty. Dkt. No. 080437.52816US

**IN THE DRAWINGS:**

Please add new Figure 1, attached hereto.

REMARKS

Claims 1-31 were examined in the Office Action March 24, 2005. The following address each of the issues raised in the Office Action.

Drawings and Specification: The Examiner has required the submission of a drawing illustrating the present invention. The Applicants have prepared proposed new Fig. 1, attached hereto, and respectfully request Examiner approval. Corresponding amendments have been made to the specification, including addition of a "Brief Description of the Drawings" section and insertion of element numbers used in Fig. 1 adjacent to their corresponding original text descriptions. The specification amendments are submitted in the Second Substitute Specification attached hereto. No new matter has been included in the figure or the specification.

Abstract: The Abstract is objected to as being longer than 150 words. The Applicants note that the substitute Abstract submitted with the Preliminary Amendment filed on March 23, 2004 contains 94 words. Withdrawal of this objection is respectfully requested.

Section 112, First Paragraph Rejection: The Applicants respectfully traverse the rejection of claim 20 as not enabled.

Claim 20 adds to claim 19 the feature: "the component of the acceleration in the roadway direction normal to a gravity direction is determined from a satellite-based navigation system." The Examiner maintains this subject matter was not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention. March 22, 2005 Office Action at 4.

The Applicants maintain that with the information contained in the specification and the knowledge or those skilled in the art, claim 20 is satisfactorily enabled. It is well known that a satellite-based Global Positioning System (GPS) can provide both position information and, by time differentiation of the position information (*i.e.*, distance traveled in a given time interval), velocity information. It is also common knowledge in the engineering arts that acceleration may be determined from the time derivative of velocity (*i.e.*,  $dv/dt$ ). See Specification at [0014] (“the time-related differential of the vehicle speed “ $v$ ” replaces the acceleration [element in the mass equation]”): at [0023] (“From the change in speed of the vehicle wheel speed ... an acceleration of the vehicle occurring in the roadway direction can be easily determined.”).

The Applicants respectfully submit that one of ordinary skill in the art would readily understand how “the component of the acceleration in the roadway direction normal to a gravity direction” can be “determined from a satellite-based navigation system,” *i.e.*, by taking the first derivative the navigation system’s velocity (which itself is the first derivative of the GPS’s position determinations) to obtain an acceleration value.

In view of the foregoing, the Applicants respectfully request the pending § 112, first paragraph rejection be reconsidered and withdrawn.

Section 112, Second Paragraph Rejection: The Applicants respectfully traverse the rejection of claims 14-15 and 30-31 as indefinite as lacking antecedent basis for the terms “detectable offsets” and “plausibility controls.”

Claims 15 and 31 add plausibility controls to the claim 1 and 16 mass determination methods. The Applicants note that because the plausibility controls are new elements (as described, for example, in paragraph [0038] as separate checks in the mass determination method), there is no antecedent basis issue, *i.e.*, there is no prior recitation of these controls, and therefore no potential for confusion or indefiniteness relative to any term in claims 1 or 16.

As to claims 14 and 30, these claims recite that offsets detectable in the claim 1 and 16 mass determination methods are corrected. The specification provides examples of such detectable offsets (*i.e.*, deviations from estimated values). *See e.g.*, Specification at ¶[0037] (variance from “the estimation from the braking operation); ¶[0039] (discussing correction factors for air resistance and rolling resistance terms). When read in context with the specification (as required), one of ordinary skill would readily understand that the detectable offsets are deviations associated with each of the recited terms, *i.e.*, the recitation of “detectable offsets” is an additional limitation for which no antecedent basis is required. For clarity, however, and without intent to alter claim scope, the Applicants have amended claims 14 and 30 to recite the offsets are “detectable offsets in at least one of the vehicle acceleration, driving force of a vehicle drive unit, resistance forces resulting from rotational forces, air resistance, rolling resistance and the slope descending force.”

In view of the foregoing, reconsideration and withdrawal of the pending § 112, second paragraph rejections is respectfully requested.

Rejections Under § 103(a): Claims 1-28 (but not 29-31) stand rejected under 35 U.S.C. § 103(a) as unpatentable over the following references:

- Claims 1-6, 8, 12, 16-19, 21-22, 24 and 28: U.S. Patent No. 6,314,383 B1 to Leimbach, *et al.* ("Leimbach") in view of U.S. Patent No. 6,332,354 B1 to Lalor, *et al.* ("Lalor").
- Claims 7 and 23: Leimbach and Lalor, in further view of U.S. Patent No. 6,374,171 B2 to Weiberle, *et al.* ("Weiberle").
- Claims 9 and 25: Leimbach and Lalor, in further view of U.S. Patent No. 6,059,379 B1 to Demi, *et al.* ("Demi").
- Claims 10 and 26: Leimbach and Lalor, in further view of U.S. Patent Publication No. US 2002/0008423 A1 to Yasui, *et al.* ("Yasui").
- Claims 11 and 27: Leimbach, Lalor and Demi, in further view of Yasui.
- Claims 12 and 28: Leimbach and Lalor, in further view of U.S. Patent No. 5,485,381 A to Heintz, *et al.* ("Heintz").

The Applicants respectfully traverse the pending rejections based on Leimbach, on the grounds that the references, either alone or in combination, fail to teach or suggest all the features of the present invention recited in independent claims 1 and 16 and their respective dependent claims.

The Leimbach reference's parent German application, DE 197 28 867 A1, is described and distinguished at pages 1-2 of the present specification. *See, e.g.,* Present Specification at ¶[0004].

Leimbach teaches only a mass estimation technique which *ignores* the effects of forces such as slope and braking, enabling the Leimbach system to obtain a "sufficiently precise for practical use" mass estimate without additional slope or braking sensors. Leimbach does not achieve this objective by actually "detecting" a roadway slope or a braking force, but by *rejecting* mass estimates

when such factors may be present. Specifically, Leimbach discloses the determination of estimated mass values based on a comparison of mass estimates derived from first and second vehicle acceleration measurements in order to in one situation – during acceleration on level ground. If, in this mass determination process, Leimbach determines that the vehicle mass estimate is so far from a prior mass estimate as to suggest the vehicle is on a “significant” incline, then Leimbach does not take into account the roadway slope to more accurately estimate the vehicle mass, but instead simply *rejects* the present mass estimate as too unreliable. Leimbach at 1:64-2:1 (“A roadway slope is detected using a comparison [of the present mass estimated to a prior estimate], whereby an erroneous determination of mass due to roadway slope is avoided *without necessitating an additional sensor* for determining ... the roadway slope”); at 4:64-5:15 (“To determine whether there is a significant roadway slope ... it is determined whether the value  $\Delta M$  [difference between mass estimate values] ... is within a predetermined range.”; if outside the range, a slope is presumed to be present, and “block 27 is controlled *such that no value  $M_{ges}$  is formed for the mass.*”) (emphasis added).

Thus, Leimbach does not teach or suggest the present invention’s determination of a mass value during “different driving situations” (e.g., on level ground, on an upward incline, on a downward incline, during braking), nor the consideration of slope or braking forces in its mass estimation calculations.

For their part, the Lalor reference (cited as teaching a system and method for determining the effectiveness of a braking system), the Weiberle reference

(cited as teaching a detection and use of vehicle body pitch), the Demi reference (cited for teaching brake force determination from brake pressure and an estimated friction coefficient), the Yasui reference (cited as teaching brake force distribution to prevent wheel slippage), and Heintz reference (cited as teaching determination of inclination/and path determination from a navigation system), all fail to address or otherwise cure the deficiencies of Leimbach. Accordingly, no combination of these references with Leimbach teaches or suggest all the features of the present invention recited in independent claims 1 and 16 and their respective dependent claims. Claims 1-31 are therefore patentable over these references under § 103(a).

Reconsideration and withdrawal of the pending § 103(a) rejections is respectfully requested.

**CONCLUSION**

In view of the foregoing amendments and remarks, the Applicants respectfully submit that claims 1-31 are now in condition for allowance, and requests issuance of a Notice of Allowance for these claims.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and

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please charge any deficiency in fees or credit any overpayments to Deposit  
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Respectfully submitted,

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